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FOREST RESEARCH NEWS

August 1974

FOR THE SOUTH

SOUTHERN & SOUTHEASTERN FOREST EXPERIMENT STATIONS, USDA FOREST SERVICE

Georgia Timber Situation Is Improving

Timber volume in Georgia increased by 29 percent between 1961 and 1972 despite the loss of about 1 million acres of forest. This is one of the major findings in a report, "Georgia's Timber, 1972," released by the Southeastern Forest Experiment Station.

Between 1961 and 1972, some 2 million acres of commercial forest in Georgia were cleared for other land uses, and only about 1 million acres of new forest were established. Thus, the total

acreage of forest in the State declined from 25.8 to 24.8 million acres. With 2 out of 3 acres in the State still classified as commercial forest, Georgia ranks second only to Oregon in acres of commercial timberland.

Despite the decline in acreage, the volume of growing stock increased from 19.6 to 25.3 billion cubic feet, or by 29 percent. Almost 80 percent of this increase occurred in the Piedmont and mountains. Two species, loblolly and slash pine, accounted for more than half the gain. The increase is largely attributable to a high proportion of young timber stands whose trees became large enough to contain merchantable timber between surveys.

Continued on P. 2, Col. 1



Georgia leads the Nation in pulpwood production, and a new report indicates that heavy cutting can continue.

Of Pines and Profits--

The South's greatest opportunity to boost timber production lies in converting hardwood-invaded pine sites to pure pine, according to Walter C. Anderson, Southern Forest Experiment Station economist.

Low-quality hardwoods predominate on about 70 million acres that are better suited to growing pine. Foresters know how to remedy the situation, but the cost of converting to pine is often prohibitive. And the longer the conversion is delayed, the more expensive and difficult land clearing becomes.

An obvious way to offset conversion costs is to find new uses for the hardwoods that must be removed. This solution would reduce the variability in clearing costs since dense stands of hardwood, though most expensive to remove, would also be the most valuable. Similarly, delaying conversion would not increase costs drastically if the timber removed could be sold.

But, the USDA Forest Service researcher warns, improving markets for hardwoods would have a

dual effect. While it would reduce the outlay for clearing, it would also reduce the profitability of conversion. The return from an investment in type conversion is not simply the value of the pine stand at maturity. It is the difference between the future worth of the pine and the future worth of the hardwood. Creating new hardwood products would increase the value of the hardwood crop and thus lower the profitability of converting to pine.

The net result of these two effects can be determined only for a specific site where type conversion is being considered.

Anderson's article, "An Economist's View of the Pine-Site Hardwood Problem," appeared recently in *FOREST PRODUCTS JOURNAL*. Reprints are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.



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Georgia Timber

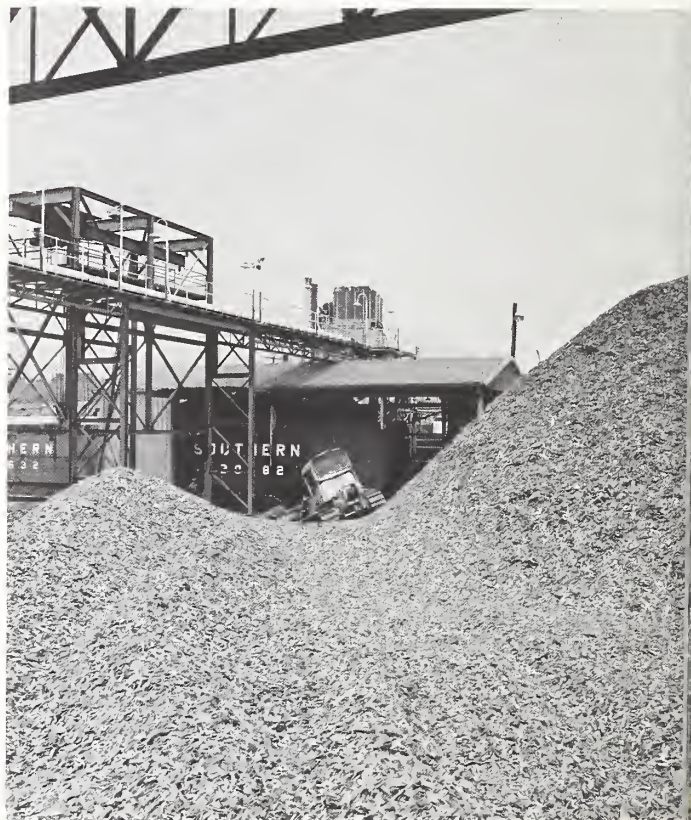
(Continued from p. 1, col. 2)

A group of counties south of the Altamaha River in southeastern Georgia was the only portion of the State in which timber volumes declined. Timber there was harvested more rapidly than it was being grown, according to county totals. Almost 40 percent of the softwood removals came from southeastern Georgia in 1971. But the future supplies there are better than the totals suggest. Some 1.6 million acres of tree plantations are found in this area. The report points out that 70 percent of these planted stands are less than 15 years old. The trees in them are still too small to be considered merchantable. As these plantations come of age, timber supplies in southeastern Georgia may come into better balance with demands.

One of the most favorable findings in the report was that the rate of net annual growth increased by 50 percent between surveys. The State's average growth of 63 cubic feet per acre of commercial forest per year is the highest in the Southeast.

In 1971, just over 1 billion cubic feet of growing stock were cut in Georgia's forests. About 75 percent of this volume was converted into timber products, 12 percent was left in the woods in the

Continued on P. 8, Col. 2



Making soluble products such as wood chips from low-quality hardwoods would offset part of the cost of clearing pine sites.

Southeastern Timber Supplies Can Be Increased

As wood requirements increase in the United States, efforts to augment timber supplies should be concentrated where returns on investment will be greatest. In a recent publication, two resource analysts at the Southeastern Forest Experiment Station, Herbert A. Knight and Joe P. McClure, identify and rank the opportunities available in the Southeast, one of the Nation's primary timber-producing regions.

In recent years, this region has provided about 8 percent of the plywood, 12 percent of the lumber, and 33 percent of the pulpwood produced in the Nation each year. Still, the annual timber harvest in the Southeast is less than half of the region's potential timber-growing capability, which is estimated at just under 6.9 billion cubic feet annually.

More than 70 percent of the 92.1 million acres of commercial forest and idle agricultural land analyzed are medium to good sites considered suitable for intensive timber management. Treatment opportunities for improving existing conditions were identified on 46.4 million of these acres.

Some 35.4 million of the 46.4 million acres are in the private, nonindustrial ownership class, which includes an estimated 700,000 landowners whose interests in forestry vary greatly. The recently passed Forest Incentives Program (FIP) is designed to assist eligible landowners increase timber production through tree planting and



Economic returns from tree planting and other forestry practices are highest where trees grow most rapidly.

timber stand improvement. The Southeast's 1974 allocation of FIP funds totaled \$2,965,000. Limited to forest ownerships of 500 acres or less, the FIP should stimulate an increased flow of timber products and public benefits from small private woodlands. The publication shows where these incentives funds can be most profitably invested.

This resource bulletin, SE-28, "Opportunities for Increasing Timber Supplies in the Southeast" is available from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.



Improved Curves

New index curves to estimate the productive potential of short-leaf pine sites should prove useful for land managers.

A new research publication reports on polymorphic site index curves—that is, curves whose shapes vary with site quality—derived from stem analyses made in the Ouachita Mountain Province of west-central Arkansas and southeastern Oklahoma. The curves produce unbiased and reliable estimates, reducing errors for all sites and ages. In recent years there has been evidence that conventional site index curves for broad regions can be improved upon.

Copies of the report, Forest Service Research Paper SO-85, are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.



Beavers corried far from their natural habitat by floodwaters cut off smoll trees, which didn't lose much time resprouting.



1973 Flood Damage Assessed

How disastrous was the 1973 record-breaking Mississippi River flood to hardwood forests and plantations? From observations of USDA Forest Service researchers, it appears that damage can be classified as minor, even though some stands did not survive.

Natural hardwood forests and plantations a year or more old continue to grow without extensive damage. First year plantings were wiped out. Even though some research plots were lost, the high water gave an opportunity to gather a lot of valuable data under extreme conditions, and that is exactly what Southern Forest Experiment Station scientists have



As the Mississippi River rose during the Spring of 1973, backwaters of the Yazoo and Sunflower Rivers spread out over the Delta, covering cottonwood plantations and vast areas of forest and farm land.

been doing. A new publication analyzes their findings, giving land managers an idea of what species will outlive prolonged high water and the tons of silt it carries with it.

Cottonwood, oak, sycamore, pecan, elm, gum, ash, hackberry, and honeylocust seem to have survived. Many young trees lost their leaves after the floodwaters went down, but they soon leafed out again. Ash was highly adaptable to the overflow. Trees went right on leafing out while the water crept up. Yellow-poplar, not native to the area, didn't make it. Ornamentals such as magnolia, eastern redcedar, Arizona cypress, and privet suffered heavy mortality.

Fusarium cankers have been observed in several cottonwood plantations starting their second year. While the flood could not be held entirely responsible for the cankers, it undoubtedly reduced the ability of the trees to resist infection. Forest scientists believe that if the trees are vig-



In some places, the floods left sediment 5 feet deep. Long-term effects are not known, but so far the trees appear undamaged.

orous, they may overcome the disease. Disking the sites as soon as they were dry seemed to help.

Overall, researchers assess flood damage to forests as minor. They say only time will tell the real effects of the heavy siltation.

A publication by H. E. Kennedy, Jr., and R. M. Krinard giv-

ing research findings is available on request from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113. Ask for Research Note SO-177. The June issue of AMERICAN FORESTS magazine carried an account of the 1973 flood and its effects. Reprints are not available.

Tips of cottonwood treetops were all that could be seen when water was as much as 12 feet deep in plantations. Only new first-year plantings failed to survive.





Trees grown from seeds that travelled to the moon and back aboard Apollo XIV arrive in New Orleans on a windy spring day for planting in Louis Armstrong Memorial Park. From left to right, Charles A. Ferguson, Editor of the New Orleans **STATES-ITEM** and co-chairman of the Armstrong Park committee; Mildred Fossier, Superintendent of the New Orleans Parkway and Park Commission; Southern Station Director John C. Barber, and New Orleans' Mayor Moon Landrieu.

MOON TREES FOR A NEW ORLEANS PARK

Remember those tree seeds that went to the moon and back with Astronaut Stuart Roosa aboard Apollo XIV?

Well, some of the trees that grew from them were presented to the City of New Orleans for planting in Louis Armstrong Memorial Park on the edge of the historic Vieux Carre.

Dr. John C. Barber, Director of the Southern Forest Experiment Station, presented the trees

to Mayor Moon Landrieu at a ceremony in front of Perserverance Hall.

The seedlings had been in the care of forest researchers at the Southern Station's Gulfport laboratory following their return to NASA's Manned Space Center at Houston, Texas, after the Apollo XIV flight early in 1971. Five species were represented in the approximately 100 trees brought to the city from Gulfport.

New Booklet Identifies Wildlife Habitat Plants

Trees, shrubs, and woody vines constitute the major source of food and cover for wildlife in southern forests. Foresters and wildlife managers must be able to identify these important plants in order to evaluate the habitat. An aid in such appraisals is a new bulletin that illustrates, in full color, the key identification features of 70 species.

The bulletin stresses the characteristics of stems and buds in winter, when wildlife food is usually in shortest supply. For most species, leaves, flowers, and fruit are also pictured. As an aid in identification, the plants are grouped according to physical characters such as growth form (vines or shrubs), leaf, stem, and bud arrangement (alternate or opposite), and leaf persistence.

The 70 species consist mainly of woody understory plants, with special attention to those preferred by white-tailed deer. Trees have been largely omitted. Though many are extremely useful to wildlife, excellent guides to their identification are already available.

Most of the photos were taken by Simeon W. Oefinger, Jr. The text was written by Lowell K. Halls, in charge of the Southern Forest Experiment Station's wildlife habitat research at Nacogdoches, Texas.

"Identifying woody plants valuable to wildlife in southern forests" is Research Paper SO-92. Single copies are available on request to the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.

Forest Scientist Gets Flemming Award

Edward Carlyle Franklin, principal plant geneticist at the Naval Stores and Timber Production Laboratory, Olustee, Florida, recently received a 1974 Arthur J. Flemming Award for outstanding scientific achievements. Established in 1948, the awards are named after the former chairman of the Civil Service Commission and are presented by the Washington Downtown Jaycees to outstanding young federal officials.

One of five scientists so honored, Franklin was cited for research that has "confirmed that both tall oil and sulfate turpentine yields are genetically highly correlated with oleo-resin yield. In addition, Dr. Franklin has been instrumental in obtaining cooperative research agreements with 16 industrial and State organizations which have greatly enhanced the research effort of production in the area of eucalyptus and pollen management research."

The 32-year-old Richmond, Virginia, native earned his bachelor's degree and his doctorate from North Carolina State University and a master's degree from the University of California. Dr. Franklin directs a team of Southeastern Forest Experiment Station scientists in breeding superior naval stores pines and in developing the theory and estimates of genetic parameters for a program of genetic improvement for selected species of eucalyptus for southwestern and central Florida.

Pine Stand Characteristics Influence Beetle Attacks

Attempts to control the damaging southern pine beetle have usually been sporadic and ineffectual. Some researchers have suggested that chemical control disperses beetle populations and encourages epidemics.

Control will be easier if beetle attacks can be linked to specific forest conditions and environmental factors. Southern Forest Experiment Station researchers identified several potential links during a study in which direct chemical controls were conscientiously applied for 5 years.

The study was done on some 31,500 acres belonging to the Southwestern Improvement Company near Oakdale, Louisiana. Early in the century mostly hardwoods grew there. In 1927-28 merchantable trees were clearcut. Natural seeding from pines converted much of this forest to pure pine and pine-hardwood mixtures. By 1963 about half the area was in pine sawtimber.

The first southern pine beetle infestation was discovered in the area in Fall 1963. Landowners began an intensive control program the following April, continuing for 5 years. Researchers analyzed detailed records of the program and beetle infestations.

Their findings indicate several definite relationships between beetle attacks and stand characteristics. Lightning was associated with 29 percent of the infestations treated from April 1965 through March 1969. Stand composition (pine, pine-hardwood, hardwood), size, and density appeared to be important factors. Beetle attacks were found to be heaviest in concentrated stands of pure pine sawtimber. Following termination of control efforts, beetle attacks increased to epidemic levels within 2 years.

Information gathered during the 5-year study has been published by the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans Louisiana 70113. It is Research Paper SO-95, "Recurring Southern Pine Beetle Infestations Near Oakdale, Louisiana" by Peter L. Lorio, Jr., and William H. Bennett. Copies are available.



Edward Carlyle Franklin

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Pine Beetle Sex Attractant Tested

U. S. Forest Service scientists are trying to use the mating urge of the southern pine beetle to help control its depredations in southern forests. They hope to attract males with a synthesized form of the compound that female beetles release to attract males at mating time. In a field trial near Asheville, North Carolina, entomologists from the Southeastern Forest Experiment Station have set out devices to test their capability for releasing the compound from aerosol cans at various times of day, under field conditions.



Timing device releases southern pine beetle sex attractant at designated times of day.

Packing of an insect pheromone in an aerosol can apparently has never been tried before. It is being tried, in cooperation with the Virginia Chemical Company, because the compound is expensive and aerosol packing offers protection from air and light until the time of maximum receptivity of the target insect.

The releasing device is a small timer powered by flashlight cells. The experiment is designed to determine if the pheromone can be automatically released at certain hours, when beetles are emerging from killed trees. Since the releasing devices were developed for commercial indoor use, one objective of the test will be to determine the applicability of this type of device outdoors.

Dr. H. A. Thomas, who is directing the field trial of the beetle attractant or pheromone, believes the approach has great potential. The pheromone, a synthetic form of a compound discovered by workers in Texas, appears to affect only the behavior of certain species of bark beetles, according to Thomas. He adds that the compound is nontoxic to other forms of life so far as is known.

Thomas stresses that practical control of southern pine beetles with the spray may be a long way off. But he is enthusiastic about the approach because it attacks the beetles at the point in their life cycle when they are in the open and vulnerable, and before they attack other trees.

Continued from P. 2, Col. 1

form of logging residues, and the remaining 13 percent was lost in cultural treatments and land clearing, in which the timber was not utilized.

Pulpwood was the leading timber product, accounting for 55 percent of the roundwood output. Georgia leads the Nation in pulpwood production.

Conclusions in the report are based on 30 months of intensive study by the Southeastern Forest Experiment Station in cooperation with the Georgia Forestry Commission, the Georgia Forest Research Council, forest industry, and thousands of private landowners. The authors are Herbert A. Knight and Joe P. McClure, Resource Analysts with the Southeastern Station. Copies are available on request from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.